

## Implementation of Common Consolidated Corporate Tax Base and its Implications for Non-participating Country: A Case Study for the Czech Republic<sup>1</sup>

Veronika SOLILOVÁ – Danuše NERUDOVÁ\*

---

### Abstract

*Common Consolidated Corporate Tax Base (hereinafter as CCCTB) system can be introduced under enhanced cooperation or as optional in EU, thus countries not implementing the system can face the outflow of tax bases into jurisdictions applying CCCTB system, which will have the impact on EU Member States budgets. The aim of the paper is to quantify the outflow/inflow of the tax bases from/in to the Czech Republic as a result of the implementation of the CCCTB system in EU-27 and to quantify the impact on the corporate tax income revenue. The research performed in the paper revealed that the optimal implementation of CCCTB system in EU-27 except of the Czech Republic would negatively change the corporate tax base, as the loss would range between 0.77% and 6.77% of the current tax base, which represents 0.20% to 1.73% of current corporate tax revenues. Moreover, the Czech Republic can also face outflow of tax bases of the parent companies.*

**Keywords:** *Common Consolidated Corporate Tax Base, group, tax base, tax revenue, Czech Republic, corporate tax*

**JEL Classification:** *H25, K22*

---

### Introduction

Even though at the beginning the systems of corporate taxation seemed to have very similar structure in the European Union – all EU Member States were applying separately personal income tax and corporate income tax (with

---

\* Veronika SOLILOVÁ – Danuše NERUDOVÁ, Mendel University in Brno, Faculty of Business and Economics, Department of Accounting and Taxation, Zemědělská 1, 613 00 Brno, Czech Republic; e-mail: ritve@email.cz; d.nerudova@seznam.cz

<sup>1</sup> The paper presents the results of the research within the project GA CR No. 13-21683S *The quantification of the impact of the introduction of Common Consolidated Corporate Tax Base on the budget revenues in the Czech Republic.*

the exemption of Italy) – deeper research had revealed enormous differences in methods of tax base construction and other taxation rules. Based on those findings, the European Commission decided to try to harmonize only the provisions affecting smooth functioning of the Internal Market. The long-term aim of the European Commission is to reduce the individual differences in the tax systems of the Member States, whether through tax harmonization or through tax coordination, in order to not cause the obstacles to the smooth functioning of internal market and not to cause inefficient allocation of production factors or production caused by the obstacles of tax character, as stated by (Nerudová and David, 2008) or (David and Nerudová, 2008). Therefore based on the study conducted by the European Commission (COM(2001) 582 final), Common Consolidated Corporate Tax Base was selected as the long-term aim in the area of corporate taxation in the EU. After more than ten years of the work Commission has published the text of CCCTB Directive proposal on 16<sup>th</sup> March, 2011.

The introduction of CCCTB system should contribute to the elimination of the obstacles for the international mergers and acquisitions, resulting from the lack of coordination of capital profit taxation. On the other hand, the system will also be connected with some disadvantages. The existence of two systems (CCCTB and national system) leaves the space for speculations, tax arbitrations, tax evasion and fraud. Moreover, if introduced under enhanced cooperation or as optional, countries not implementing the system can face the outflow of tax bases into the jurisdictions applying CCCTB system.

Cross-border consolidation comprised in CCCTB system is connected with the problem of tax sharing mechanism. The directive proposal suggests the allocation formula, which will have the impact on EU Member States budgets, for the consolidated tax base of the group will be allocated to the member states according the micro factors.

The introduction of CCCTB in the European Union will very likely change the map of the allocation of the group tax bases among the individual Member States and therefore will affect the amount of the revenues collected from the corporate taxation in the individual Member States. Moreover, different implementation scenarios may also influence tax competition on the Internal Market and may create incentives for the companies to change their country of the tax residency. Therefore, it is necessary to research different impacts of different implementation scenarios on the revenues collected from the corporate taxation. And further, as is shown in theoretical part of the paper, at present, there is no empirical study researching the impacts of CCCTB implementation according to the new draft of the directive. Moreover, all the

previous researches were conducted on the samples of companies before the financial crises in 2008, which changed the structure of the companies on the internal market. Furthermore, none of the studies was concentrating solely on the Czech Republic. Therefore in this paper we are concentrating on the research of the impacts on non-participating country (in this case the Czech Republic) based on the data from the Amadeus and Bankscope database, available in August 2014, under the rules suggested in the draft of the directive published on March 16, 2011.

The aim of the paper is to quantify the outflow/inflow of the tax bases from/in to the Czech Republic as a result of the implementation of the CCCTB system in EU-27 (i.e. all the EU Member States except the Czech Republic) and to quantify the impact on the corporate tax income revenue. The empirical analysis is based on the data available from the Amadeus and Bankscope databases.

## **1. Theoretical Background**

The essential part of the CCCTB system represents mechanism of sharing the tax base, under which the consolidated tax base should be distributed amongst the countries in which the members of the group are residents. At present, there are two basic theoretical approaches towards the problem of the determination of the income (and therefore tax base) of Multinational Enterprises (hereinafter MNE) in each country where it is active – formulary apportionment and separate entity accounting.

Under separate accounting approach each enterprise within the group is treated as separate entity. Those entities are completing financial accounts and exterminating the profit according the rules in comprised in the taxation systems in each location. Oestreicher (2000) adds that conceptual core of separate accounting is to provide a level tax playing field among integrated and stand-alone firms. Bakker (2009) mentions that under arm's length principle, affiliated businesses should set transfer prices at levels that would have prevailed that the transaction occurred between unrelated parties. According to (OECD, 2001), the arm's length principle eliminates tax consequences that could arise solely from the organizational form of the enterprise.

There can be found many critics of separate accounting system in the literature. Gresik (2001) or Desai, Foley and Hines (2003) mention that current international practice enables MNEs to relocate taxable incomes from high-tax jurisdictions to low-tax jurisdictions. Other critics were published by Hamaekers (2001), Miller (1993) or Celestin (2000).

The difficulties connected with the application of separate entity system led according to Hellerstein (1983) U.S. states and provinces in Canada to opt for formulary apportionment in case of MNEs taxation. Detailed research on US formulary apportionment was done by Wiener (2005) or Mayer (2009). Formulary apportionment in Canada was researched by Daly (1992), Mintz (2004) or Weiner (2005).

There are four empirical studies in the literature, researching the impact of CCCTB introduction on the budget revenues of the EU Member States. The first paper by Fuest, Hemmelgarn and Ramb (2007) builds on the scenario of mandatory CCCTB. To predict the possible impact on budget revenues of EU Member states, they are using the data on German company-level foreign direct investment and data from balance sheets. The sample is limited on 2,000 German parent companies and 6,000 foreign subsidiaries in other EU Member States between the years 1996 – 2000. The authors estimate that national tax bases would decline by 20% on average. The sample of selected companies has proved variations between member states in corporate tax base from -74% in Netherlands to +112% in Austria.

However, with respect to the CCCTB proposal and its possible implementation, the study has certain limitations. Firstly, it covers the scenario when CCCTB would be mandatory in all EU Member States. Secondly, it does not include payroll factor in formulary apportionment and uses origin sales not destinations sales in case of sales apportionment.

The second paper by Van der Horst, Bettendorf and Rojas-Romagosa (2007) builds also on the scenario of mandatory CCCTB, this time in 17 EU Member states. It is not aimed directly on the changes in budget revenues, but on the welfare effects connected with the introduction of the system. Not only the study comprise mandatory scenario, it also assumes that all companies have to opt for CCCTB. The research is based on the equilibrium model, which expects, that each from 17 EU Member states has MNE parent company having subsidiaries in each of the remaining Member States. The authors estimate, that mandatory CCCTB would increase the welfare by 0.02% of GDP. The economic effect across 17 EU Member states would vary between -0.7% decline in Italy and 0.82% increase in Germany.

Also in this case, certain limitations can be found. Firstly, the study does not take into account the effect from offsetting of losses and does not use destinations sales in formulary apportionment. Secondly, the model expects that compliance costs represent 10% of tax payments and further assumes, that CCCTB would eliminate compliance costs for subsidiaries with respect to the transfer pricing.

Third paper written by Deveraux and Loretz (2008) is more complex. The study researches two scenarios – voluntary and mandatory CCCTB. It analyzes the sample of 50,000 companies during the period of the years 2000 – 2004. The authors estimate, that under voluntary system, the tax revenues could decrease by 2.5%, while under mandatory system, the revenues could increase by 2%. Also as in case of the previous mentioned studies, the results shows unequal effects in individual Member States on budget revenues. The impact varies from –18% to +60%. It is necessary to mention, that from methodological point of view, the authors has applied slightly different CCCTB rules in comparison with those, comprised in CCCTB draft directive, which to certain extent distorts the results and creates the limits. Firstly, origin sales, not destination sales are used. Secondly, the study does not take into account the special apportionment rules for special industries (as comprise CCCTB draft directive from 2011). Moreover, the authors with 50% ownership test for group consolidation and not with the rules according the CCCTB draft directive (75% two layer approach).

Finally, in 2010 the study by Cline et al. (2010) was published. The authors have researched three possible scenarios – mandatory CCCTB in all EU Member States, voluntary CCCTB in all EU Member States and mandatory CCCTB in 9 EU Member States. The study is built on the model of 200,000 companies in the year 2005. The scenario of mandatory CCCTB system in 27 Member States has revealed that there would be winners and losers. The corporate tax collection varied from –8.3% in Denmark to +6.0% in France. In that model, the Czech Republic would lose 3.0% of corporate tax collection. In case, that the system would be voluntary in 27 Member States, the range of changes would be narrower – from –7.7% in Germany to +2.6% in United Kingdom. The Czech Republic would lose roughly the same – i.e. –3.1% of corporate tax collection. The scenario of mandatory CCCTB in nine Member States has revealed that the change in corporate tax collection would vary from –8.5% in Netherlands to +5.7% in France. It is necessary to mention, that this study represents the most complex one with respect to the considered scenarios. However, also this study has certain limitations. Firstly, the authors calculate with 75% ownership test for group consolidation and not with the rules according the CCCTB draft directive (75% two layer approach). Secondly, the study in the scenario when CCCTB would be introduced only in 9 Member States, does not anyhow measure the impact on the corporate tax collection in the Member States not introducing CCCTB system. Moreover, the study has used data from 2005, which mean before the financial crisis started in 2008. As the crisis has changed the map of European companies, has brought several bankruptcies and has caused the wave of international mergers and acquisitions, the results are very much distorted by that fact.

## 2. Data and Methodology

The empirical analysis follows the approach of Devereux and Loretz (2008), Fuest, Hemmelgarn and Ramb (2006) or Cline et al. (2010). The research is based on the data from the Amadeus database (update 227). Moreover, the research employs also data from the Bankscope database (update January 2014).

With respect to the aim of the paper, it was necessary to gain from the databases the group of the Czech companies and other EU companies, which would qualify under CCCTB system for consolidation regime and group treatment. For this purpose, the two-tier test was performed. It is based on two layers – control and ownership. The control test is fulfilled when the controlling company holds at least 50.01% in the controlled company. The condition of ownership is fulfilled when the ownership rights amount to more than 75% of the company's capital.

Based on the two-tier test it was identified 1,597 Czech parent companies with 2,476 subsidiaries in the Czech Republic and other EU Member States and 827 other EU parent companies with 1,384 subsidiaries in the Czech Republic. The overall amount of companies represents final data set with all necessary data. During the research the problem with missing information in financial statements of some companies arose. In order to preserve the extent of the data set, we decided to impute missing information in order to maximize the number of companies in the analysis. Based on the research on the best method for data imputation we performed in separate papers (for details see Nerudová, 2012; Nerudová and Solilová, 2014), the method of imputation was selected.

The group tax base under CCCTB system should be allocated to the individual group members based on the following allocation formula:

$$ShareX = \left( \frac{1}{3} \frac{S^A}{S^{group}} + \frac{1}{3} \left( \frac{1}{2} \frac{P^A}{P^{Group}} + \frac{1}{2} \frac{E^A}{E^{Group}} \right) + \frac{1}{3} \frac{A^A}{A^{Group}} \right) * CCCTB \quad (1)$$

where  $S$  represents sales, which are based on the sales of goods and services;  $P$  represents payroll, which includes the costs of salaries, wages, bonuses and all other employee compensation, including related pension and social security costs borne by the employer;  $E$  represents the number of employees, which are considered part of the group that pays the remuneration, unless they are under the control of a different group member, in which case they are considered part of that group. Employees are included if they are employed for at least three uninterrupted months. And finally,  $A$  represents assets, which include all fixed tangible assets, including buildings, airplanes and machinery, owned, rented, or leased by a group member.

Apportionment factors mentioned above were gained from the unconsolidated company-level financial data reported in the Amadeus and Bankscope databases or imputed, using reported tangible fixed assets and industry-specific ratio of the individual apportionment factor to tangible fixed assets for companies in the same NACE sector of economy. Therefore companies not reporting fixed assets were excluded from the imputation. Furthermore, due to the fact that Eastern European countries have lower levels of apportionment factors, mainly payroll, industry-specific ratio were calculated separately for Eastern Europe and Western Europe. Following formulas were used for missing apportionment factors:

Missing operating revenue amounts were imputed using reported tangible fixed asset data (*TFA\_reported*) and the ratio of observed average operating revenue (*AOperR*) to the tangible fixed assets for other companies in the same industry (*ATFA*):

$$\text{Operating\_revenue} = (AOperR \div ATFA) * TFA\_reported \quad (2)$$

Missing number of employees were imputed based on the reported tangible fixed assets of the company and the ratio of observed average numbers of employees (*ANoE*) to tangible fixed assets for the other companies in the same industry:

$$No.Employees\_imputed = (ANoE \div ATFA) * TFA\_reported \quad (3)$$

Missing payroll data were imputed based on the imputed employee headcount (*No.Employees\_imputed*) and the ratio of observed average payroll cost (*APayr*) to employee headcount for other companies in the same industry:

$$Payroll = (APayr / ANoE) * No.Employees\_imputed \quad (4)$$

In the next step, the determination of tax bases of identified groups of companies was performed. After that the assumptions of potential outflow/inflow of tax bases from/in to the Czech Republic were set up as a consequence of the implementation of the CCCTB system in EU-27 (i.e. all the EU Member States except the Czech Republic).

As was proved by the report of the Committee of Independent experts on Company Taxation in 1992, differences in business taxation, the burden of business taxes and differences in the level of effective tax rates among EU Member States have the impact on the decision of corporations on the location of their economic activity. Clausing (2009) further states that any intra-group transactions are also sensitive to international tax rate differentials. According to Dischinger (2007) if the difference in corporate tax rate of the subsidiary to its parent company increase by 10 percentage points, then profit of the subsidiary

decrease by 7%. Due to this fact, the first assumptions of potential outflow/inflow of tax bases from/in to the Czech Republic were set out based on the analysis of the level of the effective tax rate among the EU Member States. The concept of effective average tax rate (EATR) was firstly introduced by Deveureux and Griffith (2003), which is defined as the ratio of the present discounted value of taxes over the present discounted value of the profit of a project in the absence of the taxation.

The effective average tax rate in EU Member States in 2014 is shown in Table 1 below. As can be seen from the table, lower effective tax rate than the effective tax rate in the Czech Republic are applied namely in Bulgaria, Croatia, Cyprus, Estonia, Ireland, Latvia, Lithuania, Romania and Slovenia.

Table 1  
Effective Average Tax Rate by EU Member States, 2014

Country	Corporate tax rates in %	Effective average tax rate in %	Country	Corporate tax rates in %	Effective average tax rate in %
AT	25.0	23.0	IT	30.9	24.0
BE	34.0	26.7	LV	15.0	14.3
BG	10.0	9.0	LT	15.0	13.6
HR	20.0	16.5	LU	29.2	25.5
CY	12.5	15.2	MT	35.0	32.2
CZ	19.0	16.7	NL	25.0	22.6
DK	24.5	22.2	PL	19.0	17.5
EE	21.0	16.5	PT	30.0	27.1
FI	20.0	18.4	RO	16.0	14.8
FR	38.9	39.4	SK	22.0	19.4
DE	31.0	28.2	SI	17.0	15.5
EL	26.0	24.1	ES	35.3	32.6
HU	20.9	19.3	SE	22.0	19.4
IE	12.5	14.4	UK	21.0	22.4

Source: Spengel et al. (2014).

We assume that if the CCCTB would be introduced in neighboring countries and not in the Czech Republic, the companies would tend to relocate their taxable presence into the EU Member States with lower effective tax rate than applied in the Czech Republic in order to face lower tax burden.

Our assumption is based on two scenarios with two cumulative conditions; therefore we are researching two different groups of companies. One group of EU parent companies having subsidiaries in the Czech Republic and another group of the Czech parent companies having subsidiaries in the Czech Republic and other EU Member States,

In the first scenario, we are researching the group of EU parent company having subsidiaries in the Czech Republic. As a result of CCCTB implementation we expect the relocation (outflow) of Czech subsidiaries under two following cumulative conditions: EU parent company is situated in the jurisdictions with



lower effective tax rate than in the Czech Republic (i.e. Bulgaria, Croatia, Cyprus, Estonia, Ireland, Latvia, Lithuania, Romania and Slovenia) and after the implementation of CCCTB system the group would bear lower tax burden.

In the second scenario, we are researching the group of the Czech parent companies having subsidiaries in the Czech Republic and other EU Member States. We expect outflow to occur in situation when the group includes at least one subsidiary situated in other EU Member States (i.e. we do not expect group with only Czech subsidiaries to move its tax bases from the Czech Republic) and after the implementation of CCCTB system the group would bear lower tax burden. Further, we expect that outflow from the Czech Republic would be into the country, where other subsidiary from the group, is situated. In case of more subsidiaries in different tax jurisdictions, the selection is based on the nominal corporate tax rate. Moreover, the second scenario expects also the outflow of the tax base of the parent company (to access the CCCTB).

The determination of the potential outflow/inflow of tax bases from/in to the Czech Republic is based on the comparison of the current and new tax burden of each group. The current tax burden was determined for each group of companies using the effective tax rates of the country where subsidiaries are situated. In case of the new tax burden, the nominal tax rates were used, for when CCCTB is applied, nominal tax rates (due to the unified system of tax base construction) are comparable. Only groups bearing lower tax burden in case of the new CCCTB system, would relocate their taxable presence out of the Czech Republic. In this case it was also considered whether the activities of the group (based on the NACE code), is possible to relocate (in tables presented as a situation B). In addition, in accordance with CCCTB proposal, we were working with the special allocation formula for financial<sup>2</sup> and insurance<sup>3</sup> activities (i.e. NACE sector K, data set from Bankscope).

It is necessary to mention, that the research does not take into account the transition costs that would occur from introduction of a CCCTB, mainly due to the fact, that from the long perspective lower tax burden of the group should exceed those costs. Moreover, we do not consider any barriers to enter or exit as we assume relocation into the country where parent or other subsidiary is situated.

---

<sup>2</sup> Financial institutions are: (a) credit institutions authorized to operate in the Union in accordance with Directive 2006/48/EC of the European Parliament and of the Council; (b) entities, except for insurance undertakings as defined in Article 99, which hold financial assets amounting to 80% or more of all their fixed assets, as valued in accordance with the rules of this Directive.

<sup>3</sup> Insurance undertakings mean those undertakings authorized to operate in the Member States in accordance with Directive 73/239/EEC for non-life insurance, 2002/83/EC for life insurance and Directive 2005/68/EC for reinsurance.

Further, the quantification of the outflow/inflow of the tax bases from/in to the Czech Republic as a result of the implementation of the CCCTB system in EU-27 is sensitive on the made assumptions. In this respect must be highlighted that the elimination of the second and third assumption (i.e. only groups bearing lower tax burden in case of the new CCCTB system, would be relocate their taxable presence out of the Czech Republic; and only activities which can be relocate are considered) has resulted into the different outflows of the tax bases. For more details see Nerudová and Solilová (2015).

### 3. Results

The research of the selected group of companies (2,424 parent companies with 3,860 subsidiaries) enabled to identify the overall tax base and its potential outflow and/or inflow. Based on the above mentioned two scenarios, we identified the outflow of tax bases of 74 Czech subsidiaries, its 19 Czech parent companies, and 22 Czech subsidiaries of other EU parent companies. The research has not identified any inflow of the tax bases. The largest outflow in the amount of 2.99% represents the scenario of the Czech parent companies and its subsidiaries.

As was already mentioned above, the data set from Amadeus and Bankscope databases includes 2,424 parent companies with 3,860 subsidiaries from the different industry sectors (categorization based on NACE classification NACE A to S). This group of companies generates at present (i.e. without CCCTB implementation in EU-27) the tax base in the amount of EUR 6.9 billion in the Czech Republic (for details see Table 2 below). The largest portion of the tax base (36.51%) falls into NACE sector K (Financial and insurance activities). It is followed by NACE sector M (Professional, scientific and technical activities) in the amount of 28.40% and sector C (Manufacturing) in the amount of 19.18%. The rest of NACE sectors generate marginal portion of the tax base in the Czech Republic. It can be concluded, that Czech subsidiaries are focused mainly on services rather than on industry production. Further, as can be seen from the last line of Table 2 below, the overall amount of EUR 6.9 billion of tax base is created by the Czech subsidiaries of other EU Member States parent companies (76.25%) and by the Czech subsidiaries of Czech parent companies (23.74%).

Thus, under the current situation (i.e. without CCCTB implementation), the Czech Republic receives the tax base in the amount of EUR 6.9 billion. The following Tables 3 and 4 below summarize the results of the research of the first and second scenario. Firstly, the potential outflow of tax bases in the group of Czech subsidiaries of parent companies from other EU Member States was

considered. In this case we assume that the outflow of tax bases would occur when the parent company of Czech subsidiary would be situated in Bulgaria, Croatia, Cyprus, Estonia, Ireland, Latvia, Lithuania, Romania or Slovenia (i.e. in countries with lower effective tax rate than in the Czech Republic) and further, when the application of CCCTB would bring lower tax burden for the all group after that.

Table 2

## Czech Tax Base According to Current Conditions

NACE <sup>1</sup>	Total tax bases in CZ		Tax bases according to NACE classification in th. EUR	
	%	in th. EUR	CZ <sub>s</sub> *	CZ <sub>s</sub> **
<b>A</b>	0.08	<b>5,469</b>	3,806	1,663
<b>B</b>	0.14	<b>10,015</b>	2,179	7,836
<b>C</b>	19.18	<b>1,337,611</b>	1,227,361	110,250
<b>D</b>	3.52	<b>245,509</b>	142	245,368
<b>E</b>	0.28	<b>19,246</b>	6,291	12,955
<b>F</b>	0.65	<b>45,505</b>	36,940	8,565
<b>G</b>	5.63	<b>392,375</b>	50,989	341,386
<b>H</b>	0.68	<b>47,554</b>	26,470	21,084
<b>I</b>	0.03	<b>1,854</b>	41	1,813
<b>J</b>	2.49	<b>173,547</b>	129,007	44,540
<b>K<sup>2</sup></b>	36.51	<b>2,545,925</b>	1,924,143	621,782
<b>L</b>	0.98	<b>68,420</b>	14,523	53,897
<b>M</b>	28.40	<b>1,980,007</b>	1,886,336	93,671
<b>N</b>	0.17	<b>12,179</b>	8,183	3,996
<b>O</b>	1.07	<b>74,474</b>	706	73,767
<b>P</b>	0.01	<b>557</b>	–	557
<b>Q</b>	0.03	<b>2,376</b>	–	2,376
<b>R</b>	0.15	<b>10,347</b>	–	10,347
<b>S</b>	0.00	<b>25</b>	–	25
<b>Suma</b>	<b>100</b>	<b>6,972,994</b>	<b>5,317,117</b>	<b>1,655,877</b>
		<b>100%</b>	<b>76.25</b>	<b>23.74</b>

Notes: CZ<sub>s</sub>\* shows the tax base of the Czech subsidiaries of the parent companies from EU Member States except of the Czech Republic as the first scenario.

CZ<sub>s</sub>\*\* shows the tax base of the Czech subsidiaries of the Czech parent companies as the second scenario.

<sup>1</sup> A – Agriculture, forestry and fishing, B – Mining and quarrying, C – Manufacturing, D – Electricity, gas, steam and air conditioning supply, E – Water supply; sewerage; waste management and remediation activities, F – Construction, G – Wholesale and retail trade; repair of motor vehicles and motorcycles, H – Transporting and storage, I – Accommodation and food service activities, J – Information and communication, K – Financial and insurance activities, L – Real estate activities, M – Professional, scientific and technical activities, N – Administrative and support service activities, O – Public administration and defence; compulsory social security, P – Education, Q – Human health and social work activities, R – Arts, entertainment and recreation, S – Other services activities.

<sup>2</sup> NACE K also includes data from Bankscope database in the amount of EUR 1,764,172 th.

Source: Own research and Amadeus and Bankscope databases.

Secondly, the potential outflow of the tax bases in the group of Czech subsidiaries of Czech parent companies as the second scenario. In this case we assume that the outflow of the tax base would occur when the group would include at least one subsidiary situated in other EU Member States and further when the application of CCCTB would bring lower tax burden for the all group

after that. Thus for both scenarios we expect that only groups that would experience a lower tax burden would switch into the CCCTB system and relocate their Czech subsidiaries out of the Czech Republic so that the group can use all advantages of the new system.

Table 3

**Outflow of the Czech Tax Base and Tax Liability after Implementation of CCCTB in other EU Member States – 1. Part**

NACE <sup>1</sup>	Tax bases of CZ <sub>S</sub> * first scenario			Expected outflow of tax liability <sup>a</sup>
	Current situation	Expected outflow		
	in th. EUR	%	in th. EUR	in th. EUR
A	3,806	95,64	3,640	608
B	2,179	–	–	–
C	1,227,361	0.34	4,201	702
D	142	–	–	–
E	6,291	0.30	19	3
F	36,940	–	–	–
G	50,989	0.06	29	5
H	26,470	–	–	–
I	41	–	–	–
J	129,007	0.01	14	2
K <sup>2</sup>	594,105	0.15	894	150
K <sup>3</sup>	1,330,038	–	–	–
L	14,523	–	–	–
M	1,886,336	1.88	35,481	5,925
N	8,183	12.51	1,024	171
O	706	–	–	–
P	–	–	–	–
Q	–	–	–	–
R	–	–	–	–
S	–	–	–	–
<b>Suma A</b>	<b>5,317,117</b>		<b>45,302</b>	<b>7,565</b>
	<b>100%</b>		<b>0.85%</b>	
<b>Suma B<sup>b</sup></b>	<b>5,317,117</b>		<b>41,643</b>	<b>6,955</b>
	<b>100%</b>		<b>0.78%</b>	

Notes: CZ<sub>S</sub>\* shows the tax base of the Czech subsidiaries of the parent companies from the EU Member States except of the Czech Republic as the first scenario.

<sup>1</sup> See explanation in Table 2 above.

<sup>2</sup> NACE K includes only data from Amadeus database which are not considered as financial and insurance companies.

<sup>3</sup> NACE K includes only data from Bankscope database which are considered as financial and insurance companies.

<sup>a</sup> In case of the effective tax rate in the amount 16.7% for the Czech Republic.

<sup>b</sup> Potential outflow of tax bases after considering whether is possible to relocate business from the identified NACE sectors out of the Czech Republic. Non-relocated business is highlighted.

Source: Own research and Amadeus and Bankscope databases.

In case of the first scenario, as can be seen from Table 3 above, the research indicated potential outflow of tax bases only in the amount of 0.85% (EUR 45.3 million as Suma A, i.e. EUR 7.5 million of corporate tax liability) in NACE sectors A, C, E, G, J, K, M and N. The largest portion of outflow (EUR 35.4 million) was identified in NACE sector M (Professional, scientific and technical

activities), followed by NACE sector C (Manufacturing) with EUR 4.2 million and by NACE sector A (Agriculture, forestry and fishing) with EUR 3.6 million. However, when identified NACE sectors were further analysed whether is possible to relocate business out of the Czech Republic, the potential outflow was indicated in the amount of 0.78% (EUR 41.6 million, as Suma B, i.e. EUR 6.9 million of corporate tax liability). For more details see Table 3 above.

Table 4

**Outflow of the Czech Tax Base and Tax Liability after Implementation of CCCTB in other EU Member States – 2. Part**

NACE <sup>1</sup>	CZS** second scenario				Expected outflow of tax bases and tax liability of parent companies	
	Current situation	Expected outflow of tax bases		Expected outflow of tax liability	Tax bases	Tax liability <sup>a</sup>
	in th. EUR	%	in th. EUR	in th. EUR	in th. EUR	
A	1,663	–	–	–	–	–
B	7,836	–	–	–	–	–
C	110,250	0.34	378	63	20,053	3,349
D	245,368	–	–	–	296	50
E	12,955	–	–	–	–	–
F	8,565	–	–	–	–	–
G	341,386	0.14	467	78	10,539	1,760
H	21,084	–	–	–	–	–
I	1,813	–	–	–	–	–
J	44,540	–	–	–	–	–
K <sup>2</sup>	205,203	5.38	11,032	1,843	187	31
K <sup>3</sup>	416,579	99.52	414,574	70,721	1,746,359	291,642
L	53,897	–	–	–	–	–
M	93,671	0.12	113	19	153,331	25,606
N	3,996	–	–	–	–	–
O	73,767	–	–	–	–	–
P	557	–	–	–	–	–
Q	2,376	–	–	–	–	–
R	10,347	–	–	–	–	–
S	25	–	–	–	–	–
<b>Suma A</b>	<b>1,655,877</b>		<b>426,564</b>	<b>70,724</b>	<b>1,930,765</b>	<b>322,438</b>
	<b>100%</b>		<b>25.76%</b>			
<b>Suma B<sup>b</sup></b>	<b>1,655,877</b>		<b>11,990</b>	<b>2,003</b>	<b>184,110</b>	<b>30,746</b>
	<b>100%</b>		<b>0.72%</b>			

CZS\*\* shows the tax base of the Czech subsidiaries of the Czech parent companies as the second scenario.

1, 2, 3 – see explanation in Tables 3 and 4 above.

<sup>a</sup> In case of effective tax rate in the amount 16.7% for the Czech Republic.

<sup>b</sup> Potential outflow of tax bases after considering whether is possible to relocate business from the identified NACE sectors out of the Czech Republic. Non-relocated business is highlighted

Source: Own research and Amadeus and Bankscope databases.

In case of the second scenario, as can be seen from the above stated Table 4, the research indicated the outflow of almost 26% of the tax bases of the defined groups of companies (i.e. EUR 426.5 million as Suma A, i.e. EUR 70.7 million

of corporate tax liabilities) in NACE sectors C, G, K and M, when the largest portion of outflow was identified in NACE sector K (financial institutions and insurance undertaking). Moreover, taking into account also the possibility of parent companies relocation into the other EU Member States to access the advantages of the new CCCTB system for the group, the Czech Republic would lose at least EUR 1.9 billion of its tax base – i.e. EUR 322.4 million of corporate tax liability. However, the overall situation is different, when the activities of the companies were considered separately in each identified NACE sectors, with respect to the fact whether it is possible to relocate the business of the company out of the Czech Republic. After that, the potential outflow was indicated only in the amount of 0.72% (EUR 11.9 million, as Suma B, i.e. EUR 2 million of corporate tax liability). Moreover, it is necessary to highlight, that the research did not identify any inflow (for details see Table 4 above).

Based on the above mentioned results, it is obvious, that there can arise large differences between the outflows of tax bases in the group of Czech subsidiaries of Czech parent companies and in the group of Czech subsidiaries of other EU parent companies. The results vary from almost 26% to less than 1% outflow of tax bases. 1% outflow of tax bases can be caused by the fact that parent companies in other EU Member States will consider whether entering into the CCCTB system will bring them more advantages (for example lower tax burden for the group) than staying in the Czech tax jurisdiction. However, taking into account the possibility of relocation of business from identified NACE sectors, then the potential outflows of tax bases are similar – around 1% in both scenarios.

Furthermore, the total outflow of the tax bases in the amount of EUR 471.8 million from the total tax base in the amount of EUR 6.9 billion represents 6.77%, which is nearly 2 times more than calculated by Cline et al. (2010) in their last comparative study. Moreover, taking into account 16.7% of effective corporate income tax rate applied in the Czech Republic, the loss of corporate tax revenues would amount to 1.73% (for details see Table 5 below, situation A). Further, the impact of outflow of the tax bases of the Czech parent companies in the amount of EUR 1.9 billion on the corporate tax revenues has to be also taken into account, specifically the Czech Republic would lose 7.12% of the corporate tax revenues (i.e. EUR 322.4 million. If the possibility to relocate business out of the Czech Republic is considered separately in each NACE sector, then the outflow of tax bases and corporate tax liabilities differs (see situation B in Table 5 below). Concretely, outflow of the tax bases in the amount of EUR 53.6 million, i.e. 0.77%, then the loss of tax liability in the amount of EUR 8.9 million, i.e. 0.20% and in case of parent company EUR 184 million as the outflow of tax bases, i.e. 0.68% of corporate tax liability.

Table 5  
Summary of Results

Amadeus and Bankscope data set	First and second scenario							
	No. of outflows		Total tax base in th. EUR	Expected outflow of tax base in th. EUR		Corporate tax liability in th. EUR*	Expected outflow of tax liability in th. EUR	
	CP	CZ		CS	CP		CS	CP
Total A <sup>1</sup>	19	96	6,972,994	471,866	1,930,765	4,527,032	78,289	322,438
%			100	6.77	–	100	1.73	7.12
Total B <sup>2</sup>			6,972,994	53,633	184,110	4,527,032	8,958	30,746
%			100	0.77	–	100	0.20	0.68

\* Based on the Czech tax statistics in 2011.

CS – Czech subsidiaries

CP – Czech parent companies

<sup>1</sup> Results without considering the possibility to relocate business out of the Czech Republic.

<sup>2</sup> Results with considering the possibility to relocate business out of the Czech Republic.

Source: Own research and Amadeus and Bankscope databases.

## Conclusion

The aim of the paper was to quantify the outflow/inflow of the tax bases from/in to the Czech Republic as a result of the implementation of the CCCTB system in EU-27 (i.e. all the EU Member States except the Czech Republic) and to quantify the impact into the corporate tax revenues of the Czech Republic. The empirical analysis was based on the data available from the Amadeus and Bankscope databases and covered 2,424 parent companies with 3,860 Czech subsidiaries.

The research performed in the paper revealed that the implementation of CCCTB system in EU-27 would negatively change the tax base generated in the Czech Republic. In the respect of considering whether is possible to relocate business out of the Czech Republic and whether switching into the CCCTB system brings to the group lower tax burden, the loss would range between 0.77% and 6.77% (i.e. EUR 53.6 million to 471.8 million) of the current tax base. Taking into account corporate income tax, the Czech Republic would lose 0.20 – 1.73% of current corporate tax revenues. It is necessary to mention that after the implementation of CCCTB system in EU-27, the Czech parent companies with at least one subsidiary situated in other EU Member States can relocate its tax base from the Czech Republic as well, so that all group can use benefits and advantages of the new system, i.e. mainly lower tax burden of the group. In this case, the outflow of the tax base would range between EUR 184 million and 1.9 billion, i.e. 0.68% to 7.12% of the corporate tax revenues.

In addition, the research also shows, that the application of the CCCTB is suitable mainly for the groups which have subsidiaries generating losses or have subsidiaries situated in countries with different nominal corporate tax rate.

The results of the research shows, that the implementation of CCCTB in EU-27 without the participation of the Czech Republic might have negative impact on the overall tax base generated by the Czech subsidiaries in the Czech Republic and therefore also on the corporate tax revenue. Based on the results we recommend to the tax policy makers of the Czech Republic to implement this system in situation when other EU Member States will implement the system. The reason is that the result of not participating of the Czech Republic would negatively affect the revenues from the corporate income taxation. Current revenues from corporate income taxation would decrease by 0.2 – 1.73%. The effect would be even stronger when we would consider as the main motive for the relocation of the companies the lower tax burden. In this case Czech Republic might face decrease of revenues from corporate income tax by 0.68 – 7.12%.

## References

- BAKKER, A. (2009): *Transfer Pricing and Business Restructurings*. Amsterdam: IBFD.
- CELESTIN, L. C. (2000): *The Formulary Approach to the Taxation of Transnational Corporations: A Realistic Alternative?* [Dissertation.] Sydney: University of Sydney.
- CLAUSING, K. A. (2009): *Multinational Firm Tax Avoidance and Tax Policy*. *National Tax Journal*, 62, No. 4, pp. 703 – 725.
- CLINE, R. – NEUBIG, T. – PHILLIPS, A. – SANGER, C. – WALSH, A. (2010): *Study on the Economic and Budgetary Impact of the Introduction of a Common Consolidated Corporate Tax Base in the European Union*. Dublin: Ernst & Young LLP.
- COMMISSION OF EUROPEAN COMMUNITIES (1992): *Report of the Committee of Independent Experts on Company Taxation*. Luxembourg: Office for the official publication of the European Communities.
- DALY, M. (1992): *Tax Coordination and Competition in Canada: Some Lessons for the European Community*. Report of the committee of Independent Experts on Company Taxation. Brussels: Office for Official Publications of the European Communities.
- DAVID, P. – NERUDOVÁ, D. (2008): *Selected Problems of Value Added Tax Application in the Agricultural Sector of the European Union Internal Market*. *Agricultural Economics*, 54, No. 1, pp. 1 – 11.
- DESAI, M. A. – FOLEY, C. F. – HINES, J. R. (2003): *Chains of Ownership, Tax Competition and the Location Decision of Multinational Firms*. In: HERMANN, H. and LIPSEY, R.: *Foreign Direct Investment in the Real and Financial Sector of Industrial Countries*. Berlin: Springer-Verlag, pp. 61 – 98.
- DEVEREUX, M. P. – LORETZ, S. (2008): *Increased Efficiency through Consolidation and Formula Apportionment in the European Union?* [Working Paper, No. 12.] Oxford: Oxford University, Centre for Business Taxation.
- DEVEREUX, M. P. – GRIFFITH, R. (2003): *Evaluating Tax Policy for Location Decisions*. *International Tax and Public Finance*, 10, No. 2, pp. 107 – 126.



- DISCHINGER, M. (2007): Profit Shifting by Multinationals: Indirect Evidence from European Micro Data. [Munich Discussion Paper, No. 2007-30.] Available at: <<http://epub.ub.uni-muenchen.de/2029/>>.
- EUROPEAN COMMISSION (2001): Towards an Internal Market without Tax Obstacles: A Strategy for Providing Companies with a Consolidated Corporate Tax Base for their EU-wide Activities. COM (2001) 582 final. Brussel. Available at: <<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2001:0582:FIN:EN:PDF>>.
- FUEST, C. – HEMMELGAM, T. – RAMB, F. (2007): How Would the Introduction of an EU-wide Formula Apportionment Affect the Distribution and Size of the Corporate Tax Base? An Analysis Based on German Multinationals. *International Tax and Public Finance* 14, No. 5, pp. 605 – 626. Available at: <<http://dx.doi.org/10.1007/s10797-007-9047-7>>.
- GRESIK, T. A. (2001): The Taxing Task of Taxing Transnationals. *Journal of Economic Literature*, 39, No. 3, pp. 800 – 838. Available at: <<http://dx.doi.org/10.1257/jel.39.3.800>>.
- HAMAEEKERS, H. (2001): Arm's Length – How Long? *International Transfer Pricing Journal*, 8, No. 2, pp. 30 – 40.
- HELLERSTEIN, J. R. (1983): *State Taxation – Corporate Income and Franchise Taxes*. New York: Warren, Gorham & Lamont.
- MAYER, S. (2009): *Formulary Apportionment for the Internal Market*. Amsterdam: IBFD.
- MINTZ, J. M. (2004): Corporate Tax Harmonization in Europe: It is all About Compliance. *International Tax and Public Finance*, 11, No. 2, pp. 221 – 234. Available at: <<http://dx.doi.org/10.1023/B:ITAX.0000011401.67566.14>>.
- MILLER, B. F. (1993): A Reply to 'From the Frying Pan to the Fire'. *State Tax Notes*, 61, No. 39, pp. 705 – 719.
- NERUDO VÁ, D. – DAVID, P. (2008): VAT in the Frame of Providing Management Services to the Subsidiary in the Selected EU Member States. *Agricultural Economics*, 54, No. 7, pp. 333 – 342.
- NERUDO VÁ, D. – SOLILO VÁ, V. (2015): Optimal CCCTB Implementation and its Impact on the Corporate Tax Revenues in the Czech Republic. In: PASTUSZSKOVÁ, E., CRHO VÁ, Z.; VYCHITILO VÁ, J., VYTRHLÍKOVÁ, B. and KNÁPKOVÁ, A.: *Finances and Performance of Firms in Science, Education and Practice*. [Proceedings of 7<sup>th</sup> International Scientific Conference.] Zlín: UTB Zlín, pp. 1026 – 1035.
- NERUDO VÁ, D. – SOLILO VÁ, V. (2014): Missing Data and its Impact on the CCCTB Determination. Amsterdam: Elsevier, *Procedia Economics and Finance*, 12, pp. 462 – 471.
- NERUDO VÁ, D. (2012): Common Consolidated Corporate Tax Base: Sharing the Tax Base under Formulary Apportionment. In: STAVÁREK, D. and VODO VÁ, P. (eds): *Finance and Banking*. [Proceedings of the 13<sup>th</sup> International Conference.] Karviná: Silesian university in Opava, pp. 279 – 288.
- OECD (2001): *Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations*. Paris: OECD.
- OESTREICHER, A. (2000): *Konzern-Gewinnabgrenzung-Gewinnabgrenzung, Gewinnermittlung, Gewinnaufteilung*. München: Verlag C. H. Beck.
- SPENGEL, CH. – ENDRES, D. – FINKE, K. – HECKEMEYER, J. (2014): *Effective Tax Levels Using the Devereux/Griffith Methodology*. [EU Commission Project, No. TAXUD/2013/CC/120.] Mannheim: ZEW.
- Van Der HORST, A. – BETTENDORF, L. – ROJAS-ROMAGOSA, H. (2007): *Will Corporate Tax Consolidation Improve Efficiency in the EU?* [CPB Documents 141.] Hague: CPB Netherlands Bureau for Economic Policy Analysis.
- WEINER, J. M. (2005): *Formulary Apportionment and Group Taxation in the EU: Insights from the United States and Canada*. [Taxation Papers, Working Paper, No. 8.] Brussel: DG Taxation and Customs Union, European Commission.